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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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Jose Solo de Zaldivar

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EXAMINER

GRAHAM, KRETelia

ART UNIT

PAPER NUMBER

2827

DATE MAILED: 10/23/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/520,340	Applicant(s) SOLO DE ZALDIVAR ET AL.	
	Examiner Kretelia Graham	Art Unit 2827	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 10 August 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-4 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-4 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 04 January 2005 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Arguments

1. Applicant's arguments filed 8/10/2006 with respect to the objection to the drawings have been fully considered but they are not persuasive. Applicant has failed to comply with all of the objections to the drawings noted by the Examiner in the Non-Final Office Action dated 2/22/2006. Additionally, applicant has failed to comply with the objection to the claims and specification. Accordingly, the objection to the drawings, specification, and claims is maintained.

2. The indicated allowability of claim 5 is withdrawn in view of the newly discovered reference(s) to Sharpe-Geisler et al. (5,646,901), hereafter "Sharpe" and a different interpretation of the previously applied reference to Lin et al. (5,615,150), hereafter "Lin". Rejections based on the newly cited reference(s) follow.

Drawings

3. The drawings are objected to because of the following minor informality: reference character **Si3N4** of **FIG. 9e** should read "**SiO₃N₄**" in order to accurately reflect the dielectric layer as indicated on **page 5, line 30** of the specification. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the

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sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

4. **Figure 1 (Page 4, lines 10-15 indicates that the data of FIG. 1 is a disadvantage to conventional cells and the present invention aims to overcome this disadvantage)** should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). Corrected drawings in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Specification

5. The abstract of the disclosure is objected to because of the following minor informality: the abstract exceeds one paragraph in length. Correction is required. See MPEP § 608.01(b).

Claim Objections

6. Claims 1-4 are objected to because of the following informalities:

Pertaining to claims 2-4, the examiner suggests changing the preamble phrase: "the cell according to" to "the erasable and programmable non-volatile cell" for clarity, so there is no confusion as to which cell the claim is referring to.

Pertaining to claim 1, the examiner suggests changing the "cell" of **claim 1, lines 5 and 6** to "erasable and programmable non-volatile cell" for clarity. The examiner suggests inserting "a" between "as" and "single" of **claim 1, line 10**.

Pertaining to claim 4, the "n-well diffusion region" of **claim 4, line 2** lacks proper antecedent basis. The "p-channel transistor" of **claim 4, line 2** lacks proper antecedent basis.

Appropriate correction is required.

Claim Rejections - 35 USC § 102

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

8. Claims 1-3 are rejected under 35 U.S.C. 102(b) as being anticipated by the US patent to Lin.

Pertaining to claim 1, **FIG. 6** is directed towards: a erasable and programmable non-volatile cell **see column 2, line 58-61** comprising: a first transistor **403** having a source, a drain, and a gate; a floating capacitor **430** having a floating gate **FG** and a control gate **CG**, said floating gate being connected to said gate of said first transistor **see Abstract**; and circuitry for detecting the state, whether erased or programmed, of the cell **Note: If a high voltage is applied to the source of PMOS transistor 402, the transistor senses a programming state, in which electrons are removed from the floating gate, as a result electrons tunnel from the floating gate to the source of PMOS transistor 402 (see column 4, lines 43-67 – column 5, lines 1-4);** characterized in that said circuitry for detecting the state of the cell comprises a second transistor **402** having a source, a drain, and a gate, said second transistor being complementary to said first transistor **Note: Transistor 402 is a p-channel transistor and transistor 403 is a n-channel transistor** and said gate of said second transistor being connected to said floating gate; said floating gate and the gates of said first and second transistors are embodied as a single polymer layer **Note: See FIG. 3 where**

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transistors 402, 403, and 430 share a common floating gate (see column 3, lines 45-67) .

Pertaining to claim 2, **column 3, lines 45-59** are directed towards: characterized in that said first transistor is a n-channel transistor and said second transistor is a p-channel transistor.

Pertaining to claim 3, **column 3, lines 45-59** are directed towards: characterized in that said first and second transistors are MOSFET transistors.

9. Claims 1-3 are rejected under 35 U.S.C. 102(b) as being anticipated by the US patent to Sharpe.

Pertaining to claim 1, **FIG. 4 and FIG. 5** are directed towards: a erasable and programmable non-volatile cell **see column 1, lines 9-12** comprising: a first transistor **104** having a source, a drain, and a gate; a floating capacitor **106** having a floating gate **node connected to gates of transistor 102 and 104 (also see column 1, lines 24-29)** and a control gate **ACG**, said floating gate being connected to said gate of said first transistor; and circuitry **402** for detecting the state, whether erased or programmed, of the cell; characterized in that said circuitry for detecting the state of the cell comprises a second transistor **402** having a source, a drain, and a gate, said second transistor being complementary to said first transistor **see column 4, lines 28-29** and said gate of said second transistor being connected to said floating gate **see FIG. 5 where transistors 104 and 402 share a common floating gate 112**; said floating gate and the gates of

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said first and second transistors are embodied as a single polymer layer **POLY F.G.**; **also see FIG. 5 where transistors 104 and 402 share a common floating gate 112.**

Pertaining to claim 2, **FIG. 4** is directed towards: characterized in that said first transistor is a n-channel transistor and said second transistor is a p-channel transistor **see column 4, lines 28-29.**

Pertaining to claim 3, **FIG. 4** is directed towards: characterized in that said first and second transistors are MOSFET transistors **see column 1, lines 20-23 and column 4, lines 28-29.**

Claim Rejections - 35 USC § 103

10. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

11. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over the US patent to Lin in view of the applicants' admitted prior art. Lin discloses all of the claim limitations except: characterized in that the n-well diffusion region of said p-channel transistor is the control gate of said floating capacitor. However, applicant discloses at **page 3, lines 13-15** of the specification: characterized in that the n-well diffusion region of said p-channel transistor is the control gate of said floating capacitor. It would have been obvious to one of ordinary skill in the art at the time of the invention to provide the

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non-volatile cell of Lin with the n-well diffusion region of applicants' admitted art in order to achieve faster electron tunneling rates for programming/erasing operations.

12. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over the US patent to Sharpe in view of the applicants' admitted prior art. Sharpe discloses all of the claim limitations except: characterized in that the n-well diffusion region of said p-channel transistor is the control gate of said floating capacitor. However, applicant discloses at **page 3, lines 13-15** of the specification: characterized in that the n-well diffusion region of said p-channel transistor is the control gate of said floating capacitor. It would have been obvious to one of ordinary skill in the art at the time of the invention to provide the non-volatile cell of Sharpe with the n-well diffusion region of applicants' admitted art in order to achieve faster electron tunneling rates for programming/erasing operations.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kretelia Graham whose telephone number is (571) 272-5055. The examiner can normally be reached on Mon-Fri 8am-4:30 pm.


If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Amir Zarabian can be reached on (571) 272-1852. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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